611-TD-554-001

EOSDIS Core System Project

M&O Procedures: Section 18 — Data Distribution

Interim Update

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Raytheon Systems Company
Upper Marlboro, Maryland

Preface

This document is an interim update to the Mission Operations Procedures Manual for the ECS Project, document number 611-CD-500-001. This document has not been submitted to NASA for approval, and should be considered unofficial.

This is a complete replacement for Section 18 of the document.

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18. Data Distribution

This section describes the procedures the Data Distribution Technician (DDT) can use when performing data distribution activities at the Distributed Active Archive Centers (DAACs). Data Distribution is a process of retrieving archived data and providing the data to users in response to the users' request. The primary functions provided to the DDT are monitoring and controlling of distribution requests. Data Distribution processing mainly consists of preparing requested data products for distribution on specified media or via the network and subsequently delivering or causing the delivery of data products to the requester.

In addition to preparing the data, packaging materials are generated automatically if the data is to be distributed on media, and read-me files if the data is to be distributed via the network. The packaging materials include the packing list, which shows all data files stored on the delivery media.

Data Distribution is facilitated through three mechanisms;

- Hard media distribution by tape (8mm or D3) or (in the future) CD-ROM.
- Electronic pull where the user is notified where to find data and is allowed to ftp it from a temporary ECS storage area.
- Electronic push is where the ECS system uses an ftp put command to push the data to a predefined location on the end-user's platform.

Of these three mechanisms, only the electronic push is subject to errors not associated with hardware/media or software faults. A push distribution might fail because the remote location was not available, or the disk capacity was insufficient.

Note: Data Distribution threshold, determined by the capacity of the media type, is set up during Custom Code installation using ECSASSIST GUI. These are tunable parameters that may be modified at any time to accommodate the capacity of each media type. See sections 4.1.11.2.1.4 – "ECSAssist Subsystem Manager's mkcfg file selection screen" and 4.1.11.2.1.5 - "ECSAssist Subsystem Manager's mkcfg screen" of the ECSASSIST documentation (609-CD-510-001), for more information relative to the process for setting of these parameters. In addition, please refer to the specific Installation Instructions associated with DDIST that are generated for each custom code release.

Table 18.1-1 identifies the different types of media used within the ECS system. Each cartridge is identified by means of a bar code label that shows the media number. As the system matures more information about the bar code label process will be available.

Table 18.1-1. Distribution Media Types

Media Type	Media Name	Media Purpose
8mm	8 Millimeter cartridges	Distribution
D3	D3 tape cartridge	Distribution

CD ROM		Distribution
Electronic Push	ftp "put"	Distribution
Electronic Pull	ftp "get"	Distribution

Section 18.1 describes Data Distribution Custom Software items. Section 18.2 describes the ECS Data Distribution Operator tool. Section 18.3 describes media operations. Section 18.4 describes how to prepare products for shipment. Section 18.5 describes the process for recovering from a data distribution failure.

18.1 Data Distribution Custom Software Items

The Data Distribution custom software items monitor and control processing for distribution requests. Data Distribution processing directs storage management software to place data for distribution in working storage and creates packing lists as needed. Storage management software is directed to copy data on to tape or ftp push data as required and send notifications as required. Data Distribution performs limited automatic error response by suspending requests when most errors are encountered. The following list defines the ECS Data Distribution custom software items:

1. EcDsDistributionServer - the server process that provides the control and coordination for data distribution through request processing.
2. EcDsDdistGui - the GUI process that allows operations to initiate, track, and manipulate distribution requests by utilizing input GUI controls and Sybase Database information.
3. Data Base - the Sybase database server process that contains the request list, updates the request configuration and provides the request configuration to GUI operations. Data Distribution shares a database with Storage Management.

18.2 ECS Data Distribution Operator Tool

The Data Distribution Operator Tool GUI is used to interface with the DDT. The GUI provides error conditions and status to DDT, and allows the DDT to set parameters and control operations. The **ECS Data Distribution Operator** tool has five tab widgets; **Distrib'n Requests, System Requests**, **Tape ID's**, **Packing List**, and **Event Logging.** The **Distrib'n Requests** screen (Section 18.2.1) provides the DDT the capability to monitor detailed information on data distribution request activities, control operations including suspending, canceling, and resuming requests, changing priorities on requests, and indicate shipping status. The other tabs provide functionality still **TBD**.

The Activity Checklist table that follows provides an overview of the Data Distribution Operator tool. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (**P**) section number or Instruction (**I**) section number where details for performing the task can be found.

Table 18.2-1. ECS Data Distribution Operator Tool - Activity Checklist

Order	Role	Task	Section
1	DDT	Starting the Data Distribution Operator GUI	(P)18.2.1
2	DDT	Monitoring/Controlling Data Distribution Request	(P)18.2.2
3	DDT	Configuring Data Distribution Polling and Error Retry Rate	(P)18.2.3
4	DDT	Changing the Priority of Data Distribution Requests	(P)18.2.4
5	DDT	Suspending Data Distribution Requests	(P)18.2.5
6	DDT	Resuming Processing on a Suspended Data Distribution Request	(P)18.2.6
7	DDT	Canceling a Data Distribution Request	(P)18.2.7

18.2.1 Starting the Data Distribution Operator GUI

The Data Distribution Operator GUI provides operations personnel at a DAAC the capability to manage the distribution requests. The GUI is used to monitor data that has been retrieved from the File Storage Management System (FSMS) for distribution to users in response to their requests. Starting the Data Distribution Operator GUI in normal operations will be just a matter of clicking an icon that appears on your desktop. Because the desktop configurations have not been installed to date it will be necessary to follow the procedure described below.

1 Bring up the Data Distribution Operator GUI if the Data Distribution Operator GUI has not already been brought up. From a SUN workstation or X-Term NCD Terminal use secure shell to log into the Data Distribution Operator host. Enter **/tools/bin/ssh <hostname>** and press the return key. Example **/tools/bin/ssh g0dis02.gsfcb.ecs.nasa.gov**

2 If prompted to do so, log into the Data Distribution Operator workstation using your user identifier and password by typing ***YourUserID***, and then press **Return**.

- A password prompt is displayed.

3 Enter ***YourPassword*** or ***YourPassphrase*** (as applicable), then press **Return**.

- You are authenticated as yourself.

4 Set your display environment using the following command:
setenv DISPLAY <hostname:0.0> and press the return key

5 Change directory to the Data Distribution GUI directory using the following command:
cd /usr/ecs/<mode>/CUSTOM/utilities and press the return key

- The mode will most likely be one of the following:
  - OPS (for normal operations)
  - TS2 (for site testing)

6 Start the Data Distribution Operator GUI using command:
EcDsDdistGuiStart <mode> and press the return key
- The **Data Distribution Operator** tool is opened.
- The **Data Distribution - Track Activity** screen is displayed.

Table 18.2-2. Starting Data Distribution Operator GUI - Quick-Steps

Step	What to Enter or Select	Action to Take
1	/tools/bin/ssh <hostname>	press Return
2	YourUserID (If prompted)	press Return
3	YourPassword or YourPassphrase	press Return
4	setenv DISPLAY <hostname:0.0>	press Return
5	cd /usr/ecs/<mode>/CUSTOM/utilities	press Return
6	EcDsDdistGuiStart <mode>	press Return

18.2.2 Monitoring/Controlling Data Distribution Requests

The DDT can determine if a distribution request has completed by viewing the entries in the ECS Data Distribution Operator GUI tool. The DDT can view data distribution requests, change the priority on a selected request, mark a selected request shipped, terminate a request, and filter on all or specific requests. Additionally the filter is by Request ID, Requester, or All Requests, Media Type, and State. Each data distribution request is displayed with the Request ID, Requester, Media type, # of Files, Total Size of the request in Mbytes, State, Ordered State, Priority, Submission Time, End Time, # Media, # Granule, Media # Completed, ESDT Type, Order ID, and Warm Start status.

The following procedure will display all data distribution requests currently in the system, select filter, and view a request by media type and state. Table 18.2-3 presents the steps required to monitor data distribution requests in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1 Click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running; if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.
- The **Data Distribution Operator** tool is opened.
- The **Data Distribution - Track Activity** screen is displayed.

2 Click on the GUI's **Distrib'n Requests** tab.
- The **Data Distribution - Track Activity** window is displayed.
- Each entry displays the **Request ID**, **Requester**, **Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID,** and **Warm Start.**

3 Select **View** → **Filter** from the pull-down menu to view specific distribution requests by media type and/or state.

- The **Distribution Filter Requests** dialog box is displayed.
- The **Distribution Filter Requests** dialog box makes it possible to select specific distribution requests by request ID, requester, media type, or state, to be displayed in the **Data Distribution - Track Activity** window.

4 Click the **8 mm** radio button under Media Type, followed by the **Apply** and **OK** buttons to view all requests for that media type.

- The **Data Distribution - Track Activity** window will reappears with only the requests in the system for the 8 mm media type.

5 Select **View** → **Filter** from the pull-down menu again to view specific distribution requests by state and media type.

- The **Distribution Filter Requests** dialog box is displayed.

6 Click the **8 mm** radio button under Media Type, followed by the **Apply** button, then click the **Pending** radio button under State, followed by the **Apply** button and the **OK** button to view all requests that are waiting for the 8 mm tape drive.

- The **Data Distribution - Track Activity** window will reappears with the requests for the 8 mm media type in the "pending" state.
- Make sure that the 8 mm tape library has sufficient tapes to handle the request in the system.

7 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

Table 18.2-3. Monitoring/Controlling Data Distribution Requests - Quick-Steps

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Requests tab	single Click
3	View → Filter	single Click
4	8 mm radio button	single Click
5	Apply button	single Click
6	OK button	single Click
7	Filter… button	single Click
8	8 mm radio button	single Click
9	Apply button	single Click
10	Pending radio button	single Click
11	Apply button	single Click
12	OK button	single Click
13	File → Exit	single Click and drag

18.2.3 Configuring Data Distribution Polling and Error Retry Rate

The polling rate specifies how often (in seconds) the system updates the information displayed in the **Data Distribution - Track Activity** window. The **Data Distribution Operator** GUI **Options** menu provides the Data Distribution Technician with a means of switching the Data Distribution database polling function on or off. The technician can modify the DDist Polling Rate and the Error Retry Rate. The error retry rate specifies the amount of time (in seconds) that the system waits before trying to poll the Data Server after a failed attempt.

The following procedures for configuring data distribution polling and error retry rate starts with the assumption that all applicable servers and the **Data Distribution Operator** GUI are currently running and the **Data Distribution - Track Activity** window on the **Distrib'n Requests** tab is being displayed. Table 18.2-4 presents the steps required to configure the Data Distribution polling rate in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1 Select **Options** → **Refresh Options** from the pull-down menu.
- The **Refresh Options** dialog box is displayed.

2 Click on the **DDist Polling On** button, to change the DDist Polling state (from off to on or vice versa),
- If the button does not have a check mark in it, clicking on it turns DDist Polling on.
- If the button already has a check mark in it, clicking on it turns DDist Polling off.

3 Enter the desired value (in seconds) in the **DDist Polling Rate** field, to change the polling rate.

4 Enter the desired value (in seconds) in the **Error Retry Rate** field, to change the error retry rate.

5 Click on the **OK** button to apply the selections and dismiss the **Refresh Options** dialog box.

Table 18.2-4. Configuring Data Distribution Polling and Error Retry Rate - Quick-Steps

Step	What to Enter or Select	Action to Take
1	Options → Refresh Options	single Click
2	Ddist Polling On	single Click
3	Ddist Polling Rate value in seconds	press Return
4	Error Retry Rate value in seconds	press Return
5	OK	single Click

18.2.4 Changing the Priority of Data Distribution Requests

The DDT can change the priority of a selected data distribution request only after the request has been suspended. The priority of an active data distribution request can not be changed. Priority of a

request can be changed by selecting the request of interest, then selecting the priority, and clicking on the "Apply" button in the Change Priority frame.

The following procedure will explain the Change Request Priority. The available priorities are Xpress, Vhigh, High, Normal, and Low. Table 18.2-5 presents the steps required to monitor data distribution requests in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1 Double click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.

- The **Data Distribution Operator GUI** tool is opened.
- The **Data Distribution - Track Activity** screen is displayed.

2 Click on the GUI's **Distrib'n Requests** tab.

- The **Data Distribution - Track Activity** window is displayed.
- Each entry displays the **Request ID**, **Requester**, **Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID,** and **Warm Start.**

3 Select the desired request from the request list displayed in the **Data Distribution - Track Activity** window whose priority must be changed.

- The request is highlighted.

4 Press the **Suspend** push button on the GUI before the request is marked as being shipped.

- The action is successful if no error dialog appears.
- The desired request's state changes to "Suspend".
- A check mark will appear in the left hand column to show which request item was changed.
- Verify that the desired request's state has changed to **"Suspend"**.

5 Click and **hold** the **Change Priority** option button to display a menu of priorities, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.

- The following priority codes are available:

(**Xpress, Vhigh, High, Normal, Low)**

- The desired request's priority changes to "High".
- The action is successful if no error dialog appears.
- A check mark will appear in the left hand column to show which request item was changed.

6 Press the **Apply** or **Refresh** button.

- The data distribution list is updated with the most recent request list.
- Verify that the desired request's priority has changed to **"High"**.

7 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

Table 18.2-5. Changing the Priority of Data Distribution Requests - Quick-Steps

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Requests tab	single Click
3	Request whose Priority is to change	single Click
4	Suspend push button	single Click
5	Change Priority push button	single Click and hold
6	Apply or Refresh push button	single Click
7	File → Exit	single Click and drag

18.2.5 Suspending Data Distribution Requests

Under certain circumstances it may be advisable to suspend the processing of a data distribution request and resume it at a later time. For example, if there is a very large request that is taking up resources and causing others requests to back up (especially requests from data processing that must be filled to allow processing to proceed). The processing of that request should be suspended until a time when there is less demand on data distribution. Data Distribution Requests can also be suspended when the data distribution threshold, that were set for each media type, has been exceeded. The DDT can suspend a selected request thus putting it on a hold queue until processing is later resumed. A request will automatically suspend if errors are encountered. Each DAAC will be responsible for identifying reasons to operationally suspend requests.

The following procedure will put an incoming data distribution request on the hold queue using the Suspend function. Table 18.2-6 presents the steps required to suspend a data distribution request in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1 Double click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.

- The **Data Distribution Operator GUI** tool is opened.
- The **Data Distribution - Track Activity** screen is displayed.

2 Click on the GUI's **Distrib'n Requests** tab.

- The **Data Distribution - Track Activity** window is displayed.

- Each entry displays the **Request ID**, **Requester**, **Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID,** and **Warm Start.**

3 Select the desired request from the request list displayed in the **Data Distribution - Track Activity** window whose state must be changed.

- The request is highlighted.

4 Press the **Suspend** push button on the GUI before the request is marked as being shipped.

- The action is successful if no error dialog appears.
- The desired request's state changes to "Suspend."
- A check mark will appear in the left hand column to show which request item was changed.

5 Press the **Refresh** push button.

- The data distribution list is updated with the most recent request list.
- Verify that the desired request's state has changed to **"Suspend."**

6 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

Table 18.2-6. Suspend a Request - Quick-Steps

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Requests tab	single Click
3	Request whose Status is to change	single Click
4	Suspend push button	single Click
5	Refresh push button	single Click
6	File → Exit	single Click and drag

18.2.6 Resuming Processing on a Suspended Data Distribution Request

The DDT can resume processing on a suspended request using the Resume function. The following procedure will restart the normal 18.2-7 presents the steps required to resume a data distribution request in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1 Click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.

- The **Data Distribution Operator GUI** tool is opened.
- The **Data Distribution - Track Activity** screen is displayed.

2 Click on the GUI's **Distrib'n Requests** tab.

- The **Data Distribution - Track Activity** window is displayed.
- Each entry displays the **Request ID**, **Requester**, **Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID,** and **Warm Start.**

3 Select the suspended request from the request list displayed in the **Data Distribution - Track Activity** window whose priority must be changed.

- The request is highlighted.

4 Press the **Resume** push button on the GUI to resume processing of the request.

- The action is successful if no error dialog appears.
- The suspended request's state changes to "Resume."
- A check mark will appear in the left hand column to show which request item was changed

5 Press the **Refresh** push button.

- The data distribution list is updated with the most recent request list.
- Verify that the desired request's state has changed to **"Resume."**

6 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

Table 18.2-7. Resuming Processing on a Suspended Data Distribution Request - Quick-Steps

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Requests tab	single Click
3	Request whose Status is to change	single Click
4	Resume push button	single Click
5	Refresh push button	single Click
6	File → Exit	single Click and drag

18.2.7 Canceling a Data Distribution Request

The DDT can cancel an incoming request using the Cancel function. The following procedure will cancel a data distribution request using the Cancel function. Table 18.2-8 presents the steps required to cancel a data distribution request in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1 Double click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.

- The **Data Distribution Operator GUI** tool is opened.
- The **Data Distribution - Track Activity** screen is displayed.

2 Click on the GUI's **Distrib'n Requests** tab.

- The **Data Distribution - Track Activity** window is displayed.
- Each entry displays the Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID, and Warm Start.

3 Select the request you wish to cancel from the request list displayed in the **Data Distribution - Track Activity** window whose priority must be changed.

- The request is highlighted.

4 Press the **Cancel** push button on the GUI to resume processing of the request.

- The action is successful if no error dialog appears.
- The highlighted request's state changes to "Cancel."
- A check mark will appear in the left hand column to show which request item was changed

5 Press the **Refresh** push button.

- The data distribution list is updated with the most recent request list.
- Verify that the desired request's state has changed to **"Cancel."**

6 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

Table 18.2-8. Canceling a Data Distribution Request - Quick-Steps

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	Double Click
2	Distrib'n Requests tab	Single Click
3	Request whose Status is to change	Single Click
4	Cancel push button	single Click
5	Refresh push button	single Click
6	File → Exit	single Click and drag

18.3 Physical Media Operations

This section describes how a DDT might perform media operations. Physical media operations functions such as loading and unloading tapes into distribution peripherals, mounting and dismounting tapes from distribution peripherals, handling distribution media tape faults, and labeling distribution media are discussed in the procedures that follow.

The Activity Checklist table that follows provides an overview of media operations. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

Table 18.3-1. Media Operations - Activity Checklist

Order	Role	Task	Section
1	DDT	Loading and Unloading Tapes	(P) 18.3.1
2	DDT	Correcting Tape Fault	(I) 18.3.2
3	DDT	Labeling Tape Cartridges	(I) 18.3.3

Detailed procedures for tasks performed by the DDT are provided in the sections that follow.

18.3.1 Loading and Unloading Tapes

Loading and unloading tapes into the 8mm tape stackers is a manual process. It is recommended that the DDT check the stackers at the beginning of each shift and throughout the day to make sure tapes are available for the distribution process to write to when fulfilling hard media distribution requests. When the hard media distribution requests have completed by writing data to the 8mm tapes the distribution process will automatically unmount and deallocate the tape. Tapes can be removed and replaced individually without having to load or unload the entire stacker.

The procedure that follows explains how to load and unload the 8mm tape stackers. Table 18.3-2 presents the steps required to verify there are no 8mm requests in the system and to load and unload the 8mm tape stackers in a condensed manner. If you are already familiar with the procedure, you may prefer to use the quick-step table at the end of this procedure. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

1 Double click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.

- The Data Distribution Operator tool is opened.
- The **Data Distribution - Track Activity** screen is displayed.

2 Click on the GUI's **Distrib'n Requests** tab.

- The **Data Distribution - Track Activity** window is displayed.

- Each entry displays the Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered State, Priority, Submission Time, End Time, # of Media, # Granule, Media # Completed, ESDT, Order ID, and Warm Start.

3 Click on the **Refresh** button to update the data displayed on the screen.

- The data distribution list is updated with the most recent request list.

4 Select **View** → **Filter** from the pull-down menu to view specific distribution requests by media type.

- The **Filter Requests** dialog box is displayed.

5 Click the **8 mm** radio button, followed by the **Apply** and **OK** buttons to view all requests for that media type.

- The **Data Distribution - Track Activity** screen will appears with only the requests in the system for 8mm tapes.
- Check the state of all 8mm requests to make sure they are not active.
- Status of the request displayed in the **State** column of the **Data Distribution Requests** list **may** be… (**Waiting for Shipment, Shipped, Suspended).**
- Status of the request displayed in **State** column of the **Data Distribution Requests** list should **not** be…. (**Pending, Active, Staging or Transferring**).
- Either wait until all 8mm distribution requests are in an inactive state or suspend all active 8mm data distribution requests using the procedure in section 18.2.5 **Suspending Data Distribution Requests.**

6 When there are no 8 mm distribution requests in the system, stop EXB-210 operation and open the door by turning the key in the key-lock of the EXB-210 8mm tape stacker to stop tape stacker unit operations. Wait for the tape stacker cartridge handling mechanism to finish the current operation and moves to the "park" position.

- The doors interlock mechanism releases. Now open the front door.

7 Remove the cartridge holder by pulling out first from the top, and then the bottom.

8 Gently remove the tapes by pulling each one straight out from its slot.

9 Make sure that the write-protect switch on the replacement tapes are set correctly for the desired operation. Either **Read-Only** (write-protected) or **Writable.**

10 Hold the tapes so that the write protect switch is at the bottom, or toward the right. Insert the tape by pushing gently straight into a slot in the cartridge holder.

11 Replace the cartridge holder by inserting the two orientation features on the bottom of the holder into the bottom of the plate. Snap the holder into place by pressing on the top.

12 Close the door to start the process of resuming EXB-210 tape stacker operation.

13 Lock the door by turning the key in the key lock. After the door is closed, unit attention is returned to the data distribution server host.

14 If any 8mm distribution requests were suspended to allow stacker unloading/loading, resume distribution request processing using the procedure in section 18.2.6 **Resuming Processing on a Suspended Data Distribution Request.**

15 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

Table 18.3-2. Loading and Unloading Tapes - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Request tab	single Click
3	View → Filter	single Click
4	8 mm radio button	single Click
5	Apply button	single Click
6	OK button	single Click
7	File → Exit	single Click and drag

18.3.2 Correcting Tape Faults

Tape faults may occur which prevent the writing to a specific tape but not the drive. When the system is unable to write to a specific drive the operator will be notified, and the system will restart the specific operation on a new tape.

Correcting a tape fault involves replacing the faulty tape cartridge. The procedure is identical to that for Loading and Unloading Tapes. What differs is the reason for replacing the tape; i.e., because the tape cartridge is faulty rather than full.

18.3.3 Labeling Tape Cartridges

The distribution process automatically creates media and shipping labels. Preprinted bar code labels will be purchased for the 8mm tape cartridges. When the 8mm tapes are delivered to the distribution area the tapes will be removed from their boxes and the DDT will affix bar coded labels to the area on the edge of the tape.

18.4 Product Shipment

Before products are packaged and shipped the contents of the hard media should be verified. The tapes should be read to make sure they are readable and the contents are correct matching their corresponding packing slips.

The Activity Checklist table that follows provides an overview of the product shipment process. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task**) provides a brief explanation of the task. Column four (**Section**) provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found. Column five (**Complete?**) is used as a checklist to keep track of which task steps have been completed.

Table 18.4-1. Product Shipment - Activity Checklist

Order	Role	Task	Section
1	DDT	Performing Quality Control of Hard Media	(P) 18.4.1
2	DDT	Packaging Hard Media Products for Shipment	(I) 18.4.2
3	DDT	Mark Hard Media for Shipment	(P) 18.4.3

Detailed procedures for tasks performed by the DDT are provided in the sections that follow.

18.4.1 Performing Quality Control of Hard Media

Each DAAC should individually evaluate their Quality Control needs and the impact to the overall throughput of distribution processing to achieve the proper balance of throughput against Quality Control processing requirements. Before products are packaged and shipped, the contents of the hard media should be verified. If possible, each media product should be read to ensure that the content meets the following conditions:

- Readable.
- Correct.
- Matches the corresponding packing list.

The procedure that follows identifies the steps required for performing Quality Control on tapes and other hard media. The procedure starts with the assumption that the DDT has logged into the ECS system and the proper desktop environment is being displayed.

1 Bring up the Storage Management Operator GUI if the Storage Management Operator GUI has not already been brought up. From a SUN workstation telnet into the Storage Management Operator host. Enter **/tools/bin/ssh <hostname>** and press the return key. Example **/tools/bin/ssh g0dis02.**

2 If prompted to do so, log into the Storage Management Operator workstation using your user identifier by typing ***YourUserID***, and then press **Return**.

- A password/passphrase prompt is displayed.

3 Enter ***YourPassword*** or **YourPassphrase** (as applicable) then press **Return**.
- You are authenticated as yourself.

4 Set your terminal display environment using the following command:
setenv DISPLAY <hostname:0.0> and press the return key

5 Change to the Storage Management Operator GUI directory using the following command:
cd /usr/ecs/<mode>/CUSTOM/utilities and press the return key

6 Start the Storage Management Control GUI using command:
EcDsStStmgtGuiStart <mode> and press the return key
- The **Storage Management Control** GUI tool is opened.
- The **Configuration Parameter Reporting** screen is displayed.

7 Click on the **Resource Schedule** tab.
- The **Storage Management - Resource and Device Scheduling** screen is displayed.
- From this screen make a drive or stacker available for Quality Control use.
- Check the tape label to make sure that the drive or stacker that you want to reserve was not used to write the tape

8 **Steps to schedule the resources are TBD.**

9 Load the drive or stacker in accordance with the applicable loading and unloading procedure.

10 Mount the tapes.

11 List the contents of the tapes.

12 Compare the list of the tapes' contents with the packing list.

13 Dismount the tapes.

14 Unload the drive or stacker in accordance with the applicable loading/unloading procedure.

15 Use the storage management reservation mechanism to return the drive or stacker to normal use.

Table 18.4-2. Performing Quality Control of Hard Media - Quick-Steps

Step	What to Enter or Select	Action to Take
1	/tools/bin/ssh <hostname>	press Return
2	YourUserID (if prompted)	press Return
3	YourPassword or YourPassphrase	press Return
4	setenv DISPLAY <hostname:0.0>	press Return
5	cd /usr/ecs/<mode>/CUSTOM/utilities	press Return

6	EcDsStStmgtGuiStart <mode>	press Return
7	Resource Schedule tab	single click

18.4.2 Correcting Defective Tapes In Preparation For Shipment

18.4.3 Packaging Hard Media Products for Shipment

After the distribution process has completed and the contents of the tapes have been verified, the DDT will package the request for shipping. All hard media data requests must be packaged and sent out to the requester. The procedure to follows is DAAC dependent. Each DAAC should follow procedures currently in place for V0 Operations.

18.4.4 Mark Hard Media for Shipment

After the DDT completes the packaging process in preparation for shipping the media, he/she should use the DATA DISTRIBUTION OPERATOR GUI tool to mark the tapes for shipment. The DDT executes the DATA DISTRIBUTION OPERATOR GUI tool and goes to the Distrib'n Requests tab. A distribution request is selected from the list and can be marked shipped by activating the "Mark Shipped" push button. A request can only be successfully mark shipped when it is in the "Waiting for Shipment" state. An error dialog is displayed if the Data Distribution Server can not successfully execute the mark shipped operation. A request that has been successfully mark shipped changes its state to "Shipped."

Table 18.4-3 presents the steps required to perform the mark for shipment process. If you are already familiar with the procedures, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

1 Click on the **Data Distribution Operator GUI** icon. This assumes that the Data Distribution GUI is running, if the GUI is not up, then follow the steps for bringing up the Data Distribution GUI outlined in section 18.2.1.

- The **Data Distribution Operator GUI** tool is opened.
- The **Data Distribution - Track Activity** screen is displayed.

2 Select the "**Distrib'n Requests**" tab.

- The **Data Distribution - Track Activity** window is displayed.

3 Select the desired request whose state must be changed from "**Waiting for Shipment**."

- The request is highlighted.

4 Press the **Mark Shipped** push button.

- The action is successful if no error dialog appear with the message "DDIST Mark Shipped Failure."

5 Press the **Refresh** push button.

- The data distribution list is updated with the most recent request list.

6 Verify that the desired request's state was changed from "**Waiting for Shipment**" to **"Shipped."**

7 When you are finished monitoring distribution requests, select the **Exit** option from the **File** pull down menu to exit the GUI.

Table 18.4-3. Mark Hard Media for Shipment - Quick-Steps

Step	What to Enter or Select	Action to Take
1	Data Distribution Operator GUI icon	double Click
2	Distrib'n Requests tab	single Click
3	Request in "Waiting for Shipment" state	single Click
4	Mark Shipped push button	single Click
5	Refresh push button	single Click
6	File → Exit	single Click and drag

18.5 Recovery from a Data Distribution Failure

When a Data Distribution error occurs, there may be a requirement for action to recover from the error. Recovery actions may be made necessary by an invalid fault or other errors that result in a Data Distribution failure. When a fault (error) occurs, the following action occur:

- The processing of the Data Distribution request stops.
- A message is sent to the Data Distribution Technician with a brief description of the problem.

The Data Distribution Technician (DDT) may use the DDIST Monitor Control screen, the Data Distribution History Log (refer to the section on Data Distribution Status Monitoring) and/or the following log file (in the /usr/ecs/<**mode**>/CUSTOM/logs directory on the DDIST host machine) to review the failure event:

- DistributionServer.Alog (data distribution server .Alog)
- EcDsDdistGui.Alog
- EcDsSt8MMServer.Alog

In addition, it is possible to check the ECS Event Log (for events related to DDIST failure) using the ECS Event Log Browser tab on the Management Data Access (MDA) GUI.

This section contains some examples of faults that are likely to occur, describes the notifications provided, and proposes operator actions in response to each fault situation.

The Activity Checklist table that follows provides an overview of the Recovery from a Data Distribution failure process. Column one (**Order**) shows the order in which tasks should be accomplished. Column two (**Role**) lists the Role/Manager/Operator responsible for performing the task. Column three (**Task)** provides a brief explanation of the task. Column four (**Section**) provides the Procedure (**P**) section number or Instruction (**I**) section number where details for performing the task can be found.

Table 18.5-1. Recovery from a Data Distribution Failure - Activity Checklist

Order	Role	Task	Section
1	DDT	Troubleshooting a Data Distribution Failure	(P) 18.5.1
2	DDT	Recovering from Ddist Refresh Failure	(P) 18.5.2
3	DDT	Recovering from a Ddist Cancel Failure	(P) 18.5.3
4	DDT	Recovering from Ddist Set Priority Failure	(P) 18.5.4
5	DDT	Recovering from Ddist Suspend/Suspend A Failure	(P) 18.5.5
6	DDT	Recovering from Ddist Resume/Resume All Failure	(P) 18.5.6
7	DDT	Recovering from Ddist Mark Ship Failure	(P) 18.5.7
8	DDT	Checking Database Connections	(P) 18.5.8

9	DDT	Display Data Distribution Error Logs	(P) 18.5.9
10	DDT	Missing E-mail Notification Pre-Amble	(P) 18.5.10

18.5.1 Troubleshooting a Data Distribution Failure

When troubleshooting a Data Distribution failure, use the procedure that follows. The procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

Upon receipt of the operator alert, use the Data Distribution - Track Activity screen scroll bars as necessary to identify the faulty distribution request.

- When there is a data distribution failure, the system provides the following three responses:
  - Logs the error.
  - Alerts the Distribution Technician.

Review the information concerning the faulty distribution request.

If additional information is needed, open and read the appropriate log file in the /usr/ecs/*mode*/CUSTOM/logs directory on the distribution host machine.

- **DistributionServer.Alog (data distribution server .Alog)**
- **EcDsDdistGui.Alog**
- **EcDsSt8MMServer.Alog**

Perform the appropriate recovery procedure depending on the nature of the problem:

- **Recovering from Ddist Refresh Failure**
- **Recovering from a Ddist Cancel Failure.**
- **Recovering from Ddist Set Priority Failure.**
- **Recovering from Ddist Suspend/Suspend All Failure**
- **Recovering from Ddist Resume/Resume All Failure.**
- **Recovering from Ddist Mark Ship Failure.**
- **Checking Data Connections.**
- **Missing E-Mail Notification Pre-Amble**

18.5.2 Recovering from Ddist Refresh Failure

When the Data Distribution GUI encounters a communication loss with the Ddist Server a **Ddist Refresh Error** will occur during a requested GUI refresh. The Dialog Message GUI was not able to get a new request list from server. Consequently, if the GUI does not display data or if the display does not refresh there may not be activity within the system to report. The procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

1≠ Upon receipt of the operator alert, press the **Reconnect button** from the toolbar menu list to re-establish Ddist Server connection.

2 Review the Data Distribution (EcDsDdistGui.Alog) log for additional information.

18.5.3 Recovering from a Ddist Cancel Failure

The DDT can cancel an incoming request using the Cancel function. An error dialog will display a **Ddist Cancel Failure** if the Distribution Server (EcDsDistributionServer) is unavailable. This is a problem because the GUI receives a failure from a server but the request was not canceled. The procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

1 Upon receipt of the operator alert, verify that canceling the request is a valid operation in the current state (e.g., Not valid if the current state is "Shipped.")

2 Press the Reconnect button from the toolbar menu list to re-establish Ddist Server connection.

3 If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up using HP OpenView.

4 After the Data Server is back on line, press the Reconnect button from the toolbar menu list to re-establish Ddist Server connection.

5 Click on the GUI's **Distrib'n Requests** tab.

- The **Data Distribution – Track Activity** window is displayed.
- Each entry displays the Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered Stated, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID, and Warm Start.

6≠ Select the request that produce the Ddist Cancel Failure error from the request list displayed in the Data Distribution – Track Activity window whose priority must be changed.

- The request is highlighted.

7 Press the Cancel push button on the GUI to resume processing of the request.

- The action is successful if no error dialog appears.
- The highlighted request's state has change to **"Cancel."**

8 Press the Refresh push button.

- The data distribution list is updated with the most recent request list.
- Verify that the desired request's state has changed to **"Cancel."**

18.5.4 Recovering from Ddist Set Priority Failure

The DDT can change the priority of a selected data distribution request only after the request has been suspended. The priority of an active data distribution request can not be changed. Priority of a request can be changed by selecting the request of interest, then selecting the priority, and clicking on the "Apply" button in the Change Priority frame.

The Data Distribution GUI will display an error in the Operator Message window if there is a problem in changing the priority on a given request. A **Ddist Set Priority Failure** is due to possible communication failure (server down) with the Data Distribution Server (EcDsDistribution Server). The GUI has received failure from the server that the request set priority has failed. The procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

1≠ Upon receipt of the operator alert, Press the Reconnect button from the toolbar menu list to re-establish Ddist Server connection.

2≠ If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up using HP OpenView.

3≠ After the Data Server is back on line, press the Reconnect button from the toolbar menu list to re-establish Ddist Server connection.

4≠ If the Distribution Server is up, review the Data Distribution (**EcDsDdistGui.Alog**) log for the **Ddist Set Priority Failure** description and additional information.

5 Click on the GUI's **Distrib'n Requests** tab.

- The **Data Distribution – Track Activity** window is displayed.
- Each entry displays the Request ID, Requester, Media, # of Files, Total Size (Mbytes), State, Ordered Stated, Priority, Submission Time, End Time, # of Media, # Granules, Media # Completed, ESDT, Order ID, and Warm Start.

6 Press the **Refresh** push button.

- The data distribution list is updated with the most recent request list.

7≠ Highlight the distribution request to be assigned a different priority from the request list displayed in the **Data Distribution – Track Activity** window.

- The request is highlighted and should be in the suspended state.
- If request is not in the suspended state, refer to outlined **18.2.5 Suspending Data Distribution Request**.

8 Select the new priority using the **"Change Priority"** button.

9 Click on the **"Apply"** button to implement the priority change.

- The action is successful if no error dialog appears.

18.5.5 Recovering from Ddist Suspend/Suspend All Failure

A Ddist Suspend/Suspend All failure may occur if there is a server failure when an attempt is made to suspend incoming data requests. Suspending data requests are only valid in staging, active, pending states. The Suspend All data requests only pertains to requests that have not been sent to Ddist. The procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

1≠ Upon receipt of the operator alert, ensure that the necessary hosts and servers are "up".

2≠ If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up using HP OpenView.

3≠ If the Distribution Server is up, review the Data Distribution (**EcDsDdistGui.Alog**) log for the **Ddist Suspend Failure** description and additional information.

18.5.6 Recovering from Ddist Resume/Resume All Failure

The Resume/Resume All Failure occurs if the database is unavailable to the Data Distribution Server. This procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

1 Upon receipt of the operator alert, ensure that the necessary hosts and servers are "up".

2 If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up using HP OpenView.
3 If the Distribution Server is up, review the Data Distribution (**EcDsDdistGui.Alog**) log for the **Ddist Suspend Failure** description and additional information.

18.5.7 Recovering from Ddist Mark Shipped Failure

After the DDT completes the packaging process in preparation for shipping the media, he/she should use the Data Distribution Operator GUI tool to mark the tapes for shipment. An error dialog will display a **Ddist Mark Shipped Failure** if the Distribution Server (EcDsDistributionServer) is unavailable. This procedure starts with the assumption that all applicable servers and the Data Distribution Operator GUI are currently running and the **Data Distribution - Track Activity** screen is displayed.

1 Upon receipt of the operator alert, ensure that the necessary hosts and servers are "up".
2 If the Distribution Server has gone down, notify the Operations Controller/System Administrator to have the server brought back up using HP OpenView.
3≠ If the Distribution Server is up, review the Data Distribution (**EcDsDdistGui.Alog**) and Storage Management (**EcDsSt8MMServer.ALOG**) logs for the **Ddist Suspend Failure** description and additional information.

18.5.8 Checking Database Connections

The storage management and data distribution shared database is the repository of data concerning data distribution requests. If applications (including the Data Distribution Operator GUI) are unable to connect to the database, the data distribution request data cannot be retrieved or (in the case of the GUI) displayed. Consequently, if the GUI does not display data or if the display does not refresh, checking the database connections is a logical step in trying to isolate the problem. The procedure for checking database connections starts with the assumption that the operator has logged in to the ECS system.

1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host.
2 Type cd /usr/ecs/MODE/CUSTOM/cfg then press Return/Enter.
3 Type view EcDsDistributionServer.CFG then press Return/Enter.
   - Although this procedure has been written for the **view** command, any UNIX editor or visualizing command (e.g., **vi, pg, more**) can be used to review the log file.
4 Review the configuration file to identify the values for the following parameters:
   - **DBName**
   - **DBServer**
   - **DBMaxConnections**
5 Type **:q!** then press **Return/Enter** to quit the view application.
6 Log in to the APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) host as described in Steps 1 through 6 of the procedure for Launching the Data Distribution GUI.
   - APC Server (e.g., e0acg01, g0acg01, l0acg02, n0acg01) typically hosts Sybase for the storage management/data distribution shared database.

- The DBServer identified in the Data Distribution configuration file includes the host name (e.g., g0acg01_srvr).

7 Type **isql-UuserID –Password –SDBServer** then press **Return/Enter.**

8 Type **sp_who** at the 1> prompt then press **Return/Enter.**

9 Type **go** at the 2> prompt then press **Return/Enter**.

18.5.9 Display Data Distribution Error Logs

1≠ From a SUN workstation or X-Term NCD Terminal telnet into the Data Distribution Operator host. Enter telnet <hostname> and press the return key. Example: telnet g0dis02.gsfcb.ecs.nasa.gov

2≠ Log into the Data Distribution Operator workstation using your user identifier and password by typing *YourUserID*, and then press Return.

- A password prompt is displayed.

3≠ Log into the Data Distribution Operator workstation using your user identifier and password by typing *YourUserID*, and then press Return.

- A password prompt is displayed.

4 Enter *YourPassword*, then press Return.

- You are authenticated as yourself.

5 Set your display environment using the following command:
setenv DISPLAY <hostname:0.0> and press the return key

6≠ Change directory to the Data Distribution GUI directory using the following command:

cd /usr/ecs/<mode>/CUSTOM/logs and press the return key.

7 To display Data Distribution .Alog use the following command:
ls –la |grep .Alog and press the return key.

18.5.10 Missing E-mail Notification Pre-Amble

E-mail notification preambles are expected to be in the preamble directory "/CUSTOM/data/DSS/". If the file with the appropriate name is in this directory, then it will be included as the preamble of the email. If the distribution server does not find the file with the appropriate name, then the email is sent without the preamble. Note that the server will log (in the ALOG and/or the Debug.log) the full file names of the preambles it would try to use. The file names for preambles of successful acquires are expected to be:

"EcDsDd" + mediaType + "EMSuccessPreamble.txt"

and for failure notifications:

"EcDsDd" + mediaType + "EMFailurePreamble.txt"

Note that "mediaType" must be "8MM", "D3", "FtpPull", or "FtpPush" (without the quotes, of course).

Please make backups if you plan to change the preambles. And if you can please do so in a way that others can tell where your backups are located (e.g. in a subdirectory named embackups under the preamble directory.)

You are not allowed to create a preamble with any plus (+) signs. Do not create preambles that contain a colon preceded by a keyword that has appeared or can appear in the server∞ constructed email body. Such keyword-colon constructs include: GRANULE:, ORDERID:, REQUESTID:, USERSTRING:, FINISHED:, MEDIATYPE:, FTPHOST:, FTPDIR:, MEDIAID:, UR:, ESDT:, FILENAME:, FILESIZE:, FTPHOST:, FTPDIR:, FTPEXPR: .

If a file from another operating system is being placed in the preamble directory, then please view it with more or vi. Make sure it looks OK (e.g. it is not one long line).